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A New Species of Arctic Eelpout, *Lycodes sagittarius,* from the Beaufort Sea, Alaska, and the Kara Sea, USSR (Pisces: Zoarcidae)

Don E. McAllister

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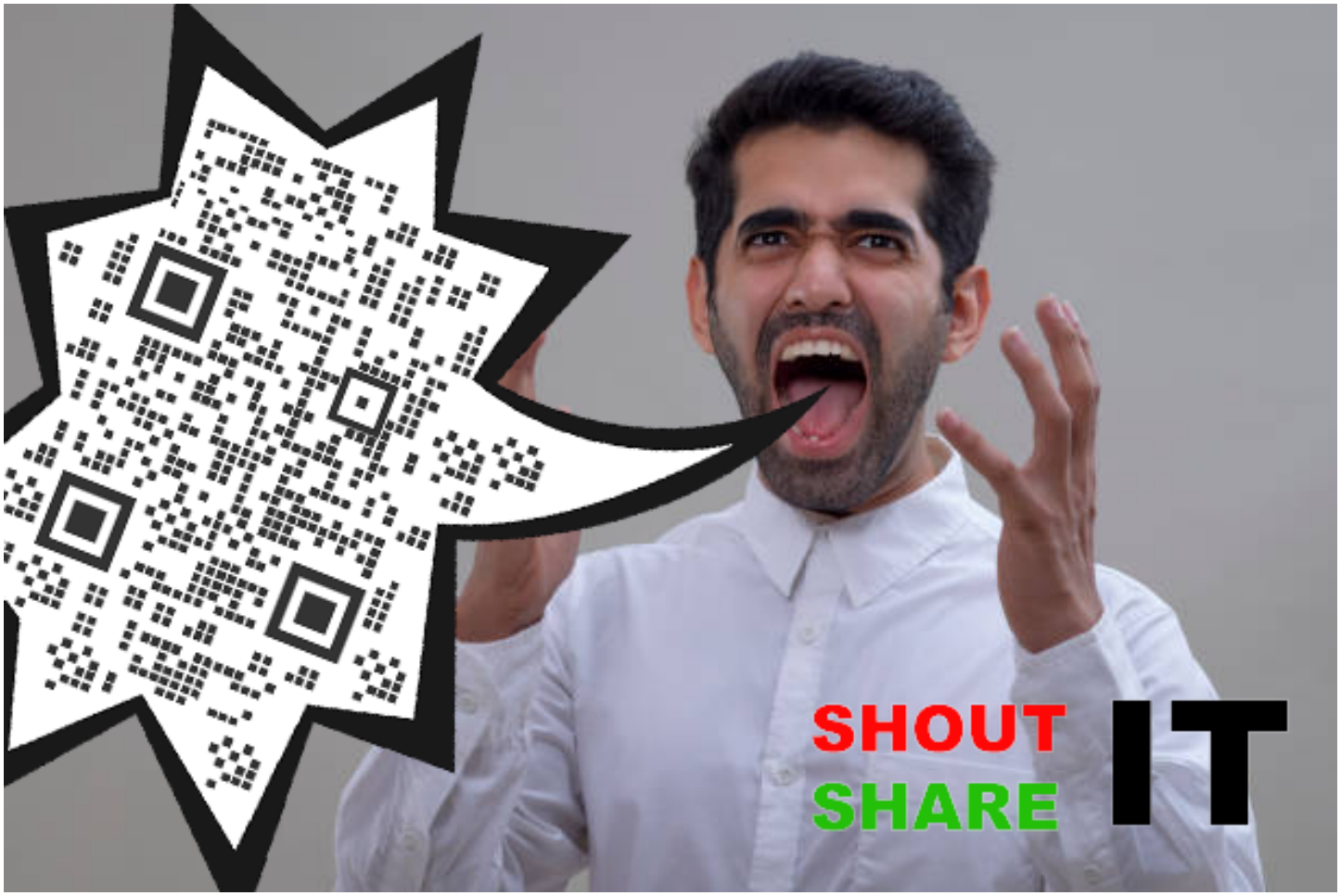
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A New Species of Arctic Eelpout, *Lycodes sagittarius,* from the Beaufort Sea, Alaska, and the Kara Sea, USSR (Pisces: Zoarcidae)

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Резюме

Дается описание нового вида длиннохвостой бельдюги *(Lycodes sagittarius),* обитающей в восточной части моря Бофорта у берегов Арктической Аляски и в северной части Карского моря у берегов СССР на глубине 357-600 м. Он отличается от других видов ликодов: 1) простой боковой линией, загнутой вниз в передней части тела и продолжающейся вдоль боков в анальной области; 2) краткой антеанальной длиной, составляющей 38-42% всей длины тела; 3) длинными брюшными плавниками, превышающими продольную орбиту глаза и составляющими 3,7-5,5% всей длины тела. Спинной плавник состоит из 98-107 лучей, а анальный — из 82-92 лучей (в каждом подсчете включается половина лучей хвостового плавника); 4) грудными плавниками, насчитывающими 16-17 лучей. Брюшина у этого вида черная, тело темное, без пятен или полос, обычно покрывающих тело и абдомен и доходящих до затылка и основания вертикальных плавников. Этот вид обитает в воде с низкими температурами (ниже 0°С) и питается моллюсками и другими беспозвоночными. Голотип этого вида экспонируется в Оттаве в Государственном музее естественных наук, находящемся в ведении Отдела государственных музеев Канады.

Добавлены также некоторые новые детали к описанию *Lycodes squamiventer* Jensen.

Summary

A new species of long-tailed eelpout, *Lycodes* ***sagittarius***, is described from the western Beaufort Sea, arctic Alaska, and the northern Kara Sea, USSR, in depths of 357–600 m. It differs from other species of *Lycodes* by the following characteristics: the single lateral line decurved below the midline anteriorly, and midlateral in position behind the level of the anal region; the short preanal length, 38–42% of total length; the long pelvic fins exceeding the longitudinal orbit diameter and comprising 3.7–5.5% of the total length; the 98–107 dorsal and 82–92 anal fin rays (each count including half the caudal fin rays); the 16–17 pectoral fin rays; the black peritoneum; the dark body without light markings; and the scales covering the body and abdomen, and extending onto the nape and the bases of the vertical fins. It inhabits temperatures of below 0°C and feeds on molluscs and other invertebrates. The holotype is deposited in the National Museum of Natural Sciences, National Museums of Canada, Ottawa.

Some new details are added to the description of *Lycodes squamiventer* Jensen.

Résumé

L'auteur décrit une nouvelle espèce de lycode à longue queue, *Lycodes* ***sagittarius***, signalée dans la zone ouest de la mer de Beaufort, au large des côtes arctiques de l'Alaska ainsi que dans la partie septentrionale de la mer de Kara, en U.R.S.S., à des profondeurs variant entre 357 et 600 mètres. Elle se distingue des autres espèces du genre par une ligne latérale unique, incurvée vers le bas, située sous la ligne médiane dans la partie antérieure du corps et occupant une position médio-latérale derrière la région anale; par la faible longueur de la région préanale (de 38 à 42 p. 100 de la longueur totale); par de longues nageoires pelviennes qui dépassent le diamètre longitudinal de l'orbite et mesurent de 3.7 à 5.5 p. 100 de la longueur totale du corps; par le nombre de rayons des nageoires dorsale (de 98 à 107) et anale (de 82 à 92), chacun de ces comptes comprenant la moitié du nombre de rayons de la nageoire caudale; par des nageoires pectorales soutenues par 16 ou 17 rayons, par un péritoine noir, un corps uniformément sombre et des écailles qui couvrent tant l'abdomen que le reste du corps de même que la nuque et la base des nageoires verticales. L'espèce habite les eaux à température négative et se nourrit de mollusques et d'autres invertébrés. L'holotype est conservé au Musée national des Sciences naturelles, Musées nationaux du Canada, Ottawa.

L'article ajoute quelques détails nouveaux à la description du *Lycodes squamiventer* Jensen.

Biographical Note

Don E. McAllister, Curator of Fishes at the National Museum of Natural Sciences, Ottawa, since 1958, is also a lecturer at the University of Ottawa. He was born in Victoria, B.C., and received his Ph.D. from the University of British Columbia in 1964. His studies have taken him to such places as Newfoundland, Quebec, the Northwest Territories, British Columbia, and Japan. He has published over 70 scientific papers, including studies on arctic fishes, sculpins, smelts, fishes found in archaeological sites, light organs in fishes, the classification of bony fishes, and a popular guide, *The Freshwater Sport Fishes of Canada*. His professional memberships include the Canadian Society of Wildlife and Fishery Biologists and the American Society of Ichthyologists and Herpetologists. His hobbies include photography, skin diving, cross-country skiing and bonsai.

Acknowledgements

The author is very grateful to Eugene Ruff, who collected the specimens and made them available for study. Drs. A. P. Andriashev, Jørgen Nielsen, N. J. Wilimovsky, and Mr. C. G. Gruchy criticized the manuscript. Drs. A. P. Andriashev and Jørgen Nielsen lent specimens under their care at the Zoological Institute of the Academy of Sciences of the USSR, Leningrad (ZIL), and the Universitetets Zoologiske Museum, Copenhagen (ZMUC), respectively, and Dr. Andriashev also provided X-rays. Alwyne Wheeler, British Museum (Natural History), London (BMNH), Dr. Stanley W. Weitzman, Smithsonian Institution, Washington, D.C. (USNM), and Dr. E. J. Crossman, Royal Ontario Museum, Toronto (ROM), issued catalogue numbers at their institutions for the paratypes. Jadwiga Aniskowicz made X-rays of the study material. C. H. Douglas illustrated the holotype. M. F. I. Smith identified two molluscs from stomach contents. The author wishes to extend his gratitude to all these persons.

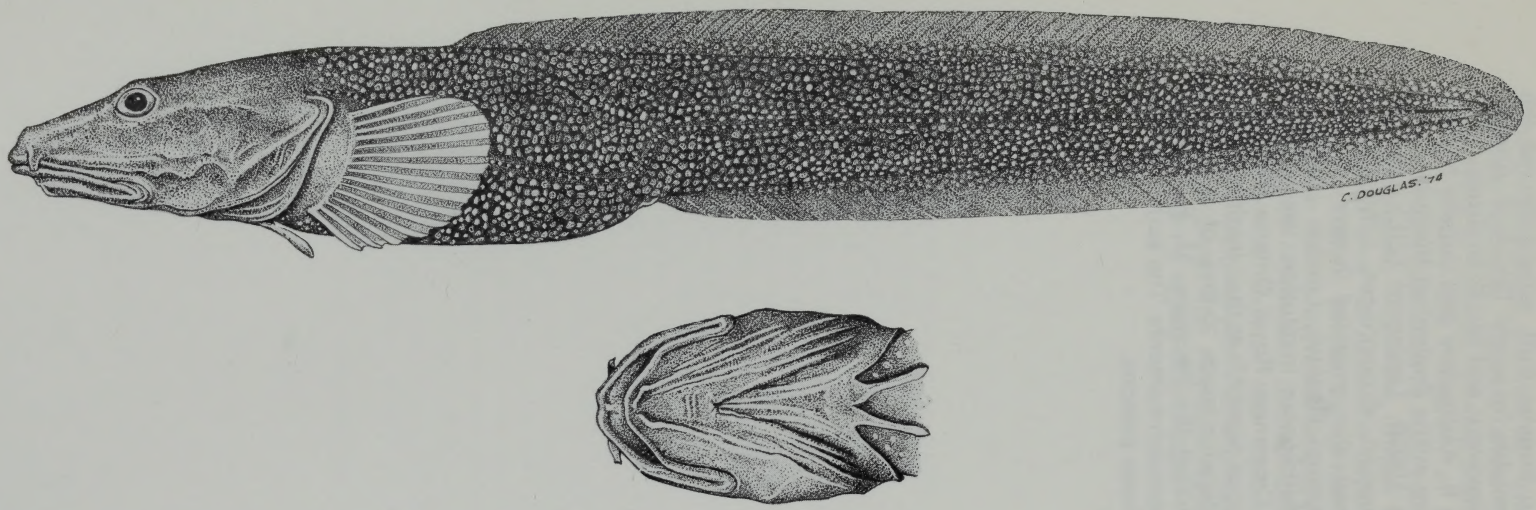

Figure 1
Holotype of *Lycodes* ***sagittarius*** sp. n., NMC74-282, 278 mm ♂, from Beaufort Sea, Alaska. Drawing by C. H. Douglas.

Introduction

Although the shelf ichthyofauna of arctic North America has been under investigation for over two centuries, very few collections have been made in depths over 200 m. Consequently, it was not surprising that the study of collections from as deep as 600 m in the western Beaufort Sea should reveal several significant range extensions and a new species of *Lycodes*. Two specimens of this new species from the Kara Sea, USSR, were ascribed by Andriashev (1954) to *Lycodes squamiventer* Jensen. But he noted the essential differences in the lateral line of his specimens from *L. squamiventer* and suggested that his specimens might represent an independent species. The collection of seven new specimens provides a firm basis for the present description of the new species.

The Alaskan collections were made by Eugene Ruff of Oregon State University on board the Western Beaufort Sea Ecological Cruise of the USCGC *Glacier* in August 1972. Collections were trawled in from 30 to 600 m in the western Beaufort Sea on the North Slope of Alaska between Prudhoe Bay and Barter Island. An otter trawl with a 3.7 m mouth and a 1.3 cm stretched mesh nylon liner were used.

Taxonomy

FAMILY ZOARCIDAE
SUBFAMILY LYCODINAE
Genus *Lycodes* Reinhardt, 1831
Lycodes ***sagittarius*** sp. n., Figures 1–3

Lycodes squamiventer (*non* Jensen), Andriashev, 1954, p. 297, figs. 167, 169 (*ex parte:* 2 specimens from northern part of Kara Sea at 595 m); Andriashev, 1973, vol. 1 : p. 546 (*ex parte:* Kara Sea specimens).

Holotype

NMC74-282: 278 mm ♂; from arctic coast of Alaska about 50 miles NNE of Brownlow Point, at lat. 70° 51′ 30″ N, long. 145° 17′ W; in 357 m; 9 August 1972; field no. WBS11 CG17; deposited in the collection of the Ichthyology Section, National Museum of Natural Sciences, National Museums of Canada, Ottawa.

Paratypes

NMC74-282A: 197 mm ♀, and BMNH 1974.10.5.1, 212 mm ♀; from same haul as holotype, ZMUC P761071, 233 mm ♀, NMC74-275, 250 mm ♀, and USNM 212282, 253 mm ♀; all from Beaufort Sea, arctic coast of Alaska, about 43 miles north of Kaktovik, at lat. 70° 43′ 6″ N, long. 143° 42′ 48″ W; in 464 m; 5 August 1972; station no. WBS3 CG4. ROM 30520, 164 mm ♂; from Beaufort Sea, arctic Alaska, about 52 miles N of Return Islands, at lat. 71° 13′ 12″ N, long. 148° 34′ 24″ W; in 600 m; 18 August 1972; station no. WEB S20. ZIL 32050, two ♂ specimens; 179 and 198 mm; east of Graham Bell Island, Franz Joseph Land, in northern part of St. Ann Trough at lat. 80° 41′ N, long. 71° 35′ W; in 595 m; 5 October 1948; *Litke* station no. 194; collected by V. Vagin.

Diagnosis

Distinguished from other species of *Lycodes* by the following characteristics: the single lateral line decurved anteriorly and mid-lateral posteriorly; the short preanal length 38–42% of total length; the long pelvic fins, 3.7–5.5% of total length, that exceed the longitudinal orbit diameter; the numerous dorsal fin rays 98–107 and anal fin rays 82–92; the moderate number of pectoral fin rays 16–17; the black peritoneum; and the dark body without light markings.

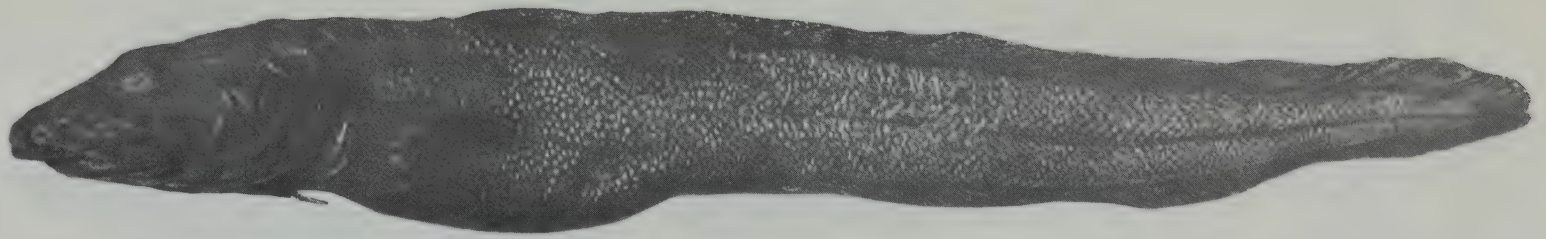

Figure 2
Holotype of *Lycodes* ***sagittarius*** sp. n., NMC74-282, 278 mm ♂, from Beaufort Sea, Alaska. Photograph by the author.

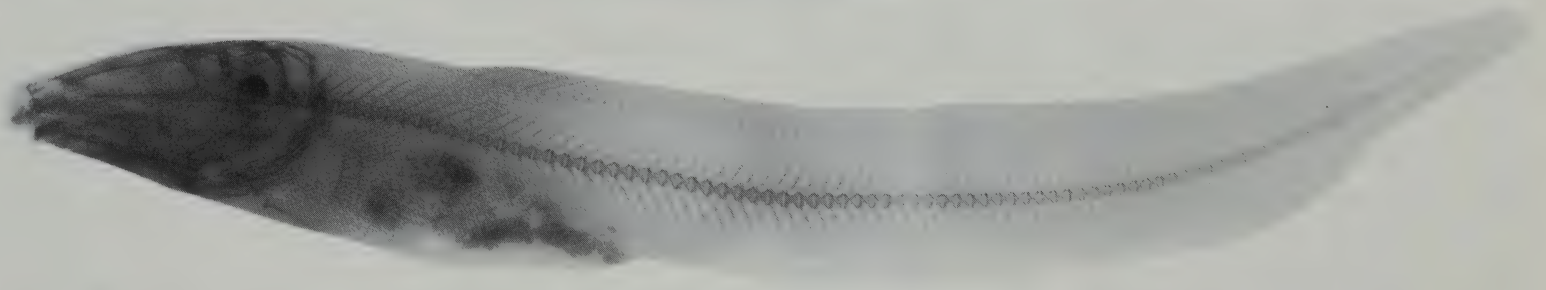

Figure 3
Holotype of *Lycodes* ***sagittarius*** sp. n., NMC74-282, 278 mm ♂, from Beaufort Sea, Alaska. X-ray by Jadwiga Aniskowicz.

Meristics
D+1/2C 98–107; C 4–6+4–6; A+1/2C 82–92; vertebrae 19–21+84–88=104–109; P 16–17; gill rakers 2–3+10–13=12–15.

Description
Lateral line on body consisting of pale neuromasts that descend from above gill cover towards the anal origin at an angle of about 30° from horizontal, then rise vertically to midline usually at a level between the anus and the anal fin origin and continue posteriorly down the middle of the side. But in one case the lateral line rises vertically to the midline one orbit diameter in front of the anus, and in another case an orbit diameter behind the anal origin. A short dorsolateral row of neuromasts may be found on either side of the nape.

Head moderate, its length including opercular membrane comprising 20–22% of total length, its maximum width equalling or exceeding its depth. Longitudinal orbit diameter comprising 14–19% of head length and 3–5% of total length. Snout length comprising 32–36% of head length and 7–8% of total length. Mental crests of moderate height, with anterior ends bevelled and not projecting or fusing together. Gill cover tip slightly pointed, upper edge horizontal. Gill opening wide, descending below pectoral fin to within 1–3 mm of base of pelvic fin. Posterior end of upper jaw ending behind pupil (holotype) or under front third of orbit. Teeth conical, 14–27 on premaxillary, 3–13 on vomer, 7–23 on palatine, 19–42 on mandible (10, 7, 15, and 42 respectively in holotype), number tending to increase with size. Infralabial lobe narrow, not sharply demarcated anteriorly from lip.

Body elongate. Scales cover body including abdomen, extending anteriorly on nape at least to level of operculum, past the bases of the pectoral fins and the tips of the appressed pelvic fins almost to their bases. Twenty to 27 horizontal rows of scales on the body above the origin of the anal fin. Scales extend onto the vertical fins (even in the specimen with a total length of 164 mm), covering one-quarter to two-thirds of their height. Two digitiform pyloric caeca lie behind the stomach. Orange eggs up to 4.5 mm in diameter were found in a specimen collected 5 August 1948.

Dorsal and anal fins long, continuous with caudal fin. Predorsal length 25–29% of total length. Posterior edge of pectoral fin diagonal, without emargination, lower rays exserted, length short, comprising 9–12% of total length. Pelvic fins long, length exceeding longitudinal orbit diameter and comprising 3.7–5.5% of total length.

Colour of body and fins a dark brown monotone, scales paler, abdomen and side of head below and behind eyes are darker, but the specimen with a total length of 164 mm has a yellowish body, dark gill cover and abdomen. Buccal and branchial cavities dusky, peritoneum black.

Biology
Specimens were caught at depths of 357, 455, and 600 m in arctic Alaska, probably at negative temperatures. Judging from sediment in the gut, the bottom was a grey mud. The two caught in the Kara Sea, USSR, were caught at 595 m depth on a brown mud bottom, where the near-bottom temperature was –0.91°C, the salinity 34.96‰, and the oxygen saturation 88%. Eggs in the Alaskan specimens were well developed in early August, but testes in the Kara Sea specimens were poorly developed in early October (Andriashev 1954), suggesting late-summer or early-fall spawning. Stomachs of Alaskan specimens contained annelids, bivalves and gastropods (*Yoldiella intermedia* Sars and *Cyclichna* cf. *occulta* Mighels and Adams), and crustaceans. The high number of vomerine teeth (more round-tipped in larger specimens) in this species may be an adaptation to a durophagus molluscan diet. The holotype and topotypic paratypes were taken with *Raja* sp., *Reinhardtius hippoglossoides*, *Lycodes seminudus*, *L. squamiventer*, and a liparid. The other Beaufort Sea paratypes were taken with *Cottunculus microps*(?), *Lycodes eudipleurostictus*, and *L. seminudus*. *Boreogadus saida* were also taken in both collections, but were probably taken in midwater during descent or ascent of the otter trawl. The Kara Sea paratypes were collected with a male *Triglops nybelini* and a male *Icelus bicornis*.

Etymology
The specific name, *sagittarius*, is taken from the Latin *sagittarius*, an archer, in reference to the bow it carries in the anterior portion of the lateral line. The specific name is treated as a masculine noun in the nominative singular standing in apposition to the generic name.

Table 1
Measurements of *Lycodes* ***sagittarius*** sp. n., in millimetres/per cent of total length

Catalogue number	Specimen number	Total length	Depth at anal origin	Head length	Orbit diameter	Snout length	Pelvic fin length	Pectoral length	Length of gill opening	Preanus length	Preanal length	Predorsal length
NMC74-282	1	278	26.8	60.2	8.7	21.6	10.4	25.1	23.7	114.0	112.0	80.7
Holotype		100%	10%	22%	3%	8%	4%	9%	9%	41%	40%	29%
USNM 212282	2	253	25.6	49.5	6.9	17.4	11.0	24.4	21.0	100.0	95.9	69.1
		100%	10%	20%	3%	7%	4%	10%	8%	40%	38%	27%
NMC74-275	1	250	27.0	52.5	8.1	16.9	12.1	27.0	21.6	106.0	98.2	71.0
		100%	11%	21%	3%	7%	5%	11%	9%	42%	39%	28%
ZMUC P761071	3	233	22.1	48.6	9.3	15.6	10.3	24.1	19.5	98.1	94.4	64.2
		100%	9%	21%	4%	7%	4%	10%	8%	42%	41%	28%
BMNH 1974.10.5.1	2	212	24.3	43.3	7.6	14.2	10.1	25.5	19.4	94.2	88.0	61.7
		100%	11%	20%	4%	7%	5%	12%	9%	44%	42%	29%
ZIL 32050	1	193	19.2	37.4	5.8	14.3	8.3	18.4	16.5	70.0	65.7	52.4
		100%	10%	19%	3%	7%	4%	10%	9%	36%	34%	27%
NMC74-282A	4	185	17.9	39.6	6.4	14.4	8.0	21.3	14.5	74.3	69.6	50.6
		100%	10%	21%	3%	8%	4%	12%	8%	40%	38%	27%
ROM 30520	1	164	15.3	34.0	7.8	11.2	9.1	20.4	13.3	64.1	60.9	41.8
		100%	9%	21%	5%	7%	6%	12%	8%	39%	37%	25%

Comparison with Other Species

The genus *Lycodes* may be divided into long- and short-tailed members. Long-tailed *Lycodes* have the anterior portion of the lateral line ventrally directed, a longer urosome, more dorsal and anal fin rays, more vertebrae, tend to be more completely scaled, more often have black instead of light peritoneum, and tend to inhabit deeper and cooler waters. With the possible exception of one or two species, the long-tailed *Lycodes* seem to form a natural group. Their ventrally directed lateral line is probably an advanced condition compared to the wholly mid-lateral state. The black peritoneum of this group may be an adaptation to eating bioluminescent prey (McAllister 1961); the long tail may be related to the selective value of bearing an increased number of neuromasts in deeper-bottom waters (Marshall 1971: 146). The long pelvic fins in *Lycodes sagittarius* may have a chemosensory function, assisting the eelpout in locating food in the light-poor arctic deepwater environment, as suggested by McAllister (in press) for other taxa of arctic fish.

Lycodes sagittarius is a long-tailed species. It differs from all except seven species in the genus by possessing a single lateral line anteriorly decurved, posteriorly mid-lateral. These seven species, which are restricted to the western North Pacific (except for *L. palearis*, also found in the eastern North Pacific) and to the neighbouring Bering and Chukchi seas, may be individually distinguished from the new species as follows. *Lycodes palearis* has shorter pelvic fins that comprise 1.1–3.1% as compared to 3.7–5.5% of total length, pale instead of black peritoneum, anterior ends of mental ridges projecting instead of bevelled. *Lycodes brevipes ochotensis* has pelvics shorter instead of longer than the orbit diameter, dorsal rays 87 as opposed to 98–107, anal rays 76 as opposed to 82–91, pectoral rays 20 as opposed to 16–17, and peritoneum dark grey instead of black.* *Lycodes soldatovi* has mental crests projecting anteriorly; pectoral rays 22–23 instead of 16–17; and pelvic fins about half, instead of more than, the orbit diameter. *Lycodes ygreknotatus* has pelvic fins only half, as opposed to exceeding, the orbit diameter; dorsal rays 88 as opposed to 98–107; anal rays 77 as opposed to 82–92; pectoral rays 21 as opposed to 16–17; and five Y-shaped white markings as opposed to none. *Lycodes microlepidotus* has pelvic fins shorter than

* *Lycodes brevipes brevipes* has pelvic fins less than one-half, instead of exceeding, the orbit diameter; a single ventral lateral line; pectoral rays 19–21 instead of 16–17; and pale instead of black peritoneum. *L. b. diapteroides* has a single lateral line descending toward the anus but disappearing under the pectoral fin without a midlateral section, pectoral fins with 19–20 rays instead of 16–17, and pelvic fins less than one half the orbit. *Lycodes brevipes ochotensis* may well represent a species distinct from the other two subspecies on the basis of the lateral line, low dorsal and anal fin ray counts, and no light bands crossing the dorsal fin.

Table 2
Meristic data for *Lycodes **sagittarius*** sp. n.

Catalogue number	Specimen number	Dorsal + ½ caudal rays	Caudal rays	Anal + ½ caudal rays	Left pectoral rays	Right pectoral rays	Scales above anal origin	Gill rakers	Abdominal vertebrae	Total vertebrae incl. urostylar	Sex	Vomerine teeth
NMC74-282												
Holotype	1	99	9	82	16	16	21	14	19	104	♂	7
USNM 212282	2	103	8	91	16	16	25	15	20	108	♀	7
NMC74-275	1	98	8	83	16	16	20	14	20	104	♀	9
ZMUC P761071	3	101	8	84	17	17	24	13	20	105	♀	13
BMNH 1974.10.5.1	2	101	8	84	16	16	27	15	21	106	♀	4
NMC74-282A	4	102	8	90	17	17	23	12	19	106	♂	3
ROM 30520	1	107	12	92	17	17	23	15	21	109	♂	7
ZIL 32050	1	101	9	91	17	17	25	–	20	107	♂	3
ZIL 32050	2	99	9	87	17	–	–	–	20	106	♂	–

pupil instead of longer than the orbit, dorsal rays 82 instead of 98–107, anal rays 74–75 instead of 82–92, pectoral rays 20–21 as opposed to 16–17, pale as opposed to black peritoneum, and a light colour with dark marks as opposed to evenly dark colouration. *Lycodes jenseni* has dorsal rays 88–90 as opposed to 98–107, anal rays 78–80 as opposed to 82–92, pectoral rays 18–20 as opposed to 16–17, pelvic length 2.2% instead of 3.7–5.5% of total length, and pale instead of black peritoneum. *Lycodes macrochir* has a deeply notched instead of entire pectoral fin; pelvics one-third, instead of exceeding, the orbit diameter; pectoral fins 15–19% instead of 9–12% of total length; dorsal fin rays 82–88 instead of 98–107; anal rays 67–72 instead of 82–92; pectoral rays 19–20 instead of 16–17; and pale instead of black peritoneum. Data for these species were obtained from Andriashev (1937, 1954, 1955, 1959), Bayliff (1954), Fedorov (1966), Hart (1973), Jensen (1904), Matsubara (1963), Schmidt (1950), Taranetz (1937), Taranetz and Andriashev (1935), and Vladykov and Tremblay (1936).

Lycodes squamiventer Jensen resembles *Lycodes sagittarius* in many respects. I was able to examine three syntypes of *L. squamiventer* and their X-rays plus an X-ray of a fourth syntype thanks to Jørgen Nielsen and A.P. Andriashev. Syntype ZMUC 236 is now deposited in the National Museum of Natural Sciences as NMC74-395.

Lycodes squamiventer Jensen differs trenchantly from *Lycodes sagittarius* in having two lateral lines — one a ventral lateral line that descends to and is parallel with the anal fin base, the other a mid-lateral line on the urosome. In addition, the pelvic fins are shorter, 2.6–3.0% instead of 3.7–5.5% of the total length, and the pectoral rays number 17–20 instead of 16–17. Since *L. squamiventer* is sympatric with *L. sagittarius*, a specimen of *squamiventer* having been found in the same collection as the holotype of *sagittarius*, the two can be considered as valid biological species. Examination of the syntypes of *L. squamiventer* permits one to add the following details to the original description: peritoneum dark brown to black; vomerine teeth 3–4; front tip of mental crests vertical or slightly projecting; pelvics shorter than orbit diameter and comprising 2.6–3.0% of total length; pectorals comprising 11–13% of total length; gill rakers 3+11–12=14–15, vertebrae 97–101 (104 in Alaskan specimen); dorsal rays 94–98 (99 in Alaskan); anal rays 81–86 (87 in Alaskan); and pectoral rays 20 (17 in Alaskan).

Key to the Species Groups of the Genus *Lycodes*

The following key distinguishes the major species groups within the genus and should assist in identification of any future specimens of *Lycodes* ***sagittarius.***

1(2) Lateral line midlateral, single, not descending below midlateral plane. Preanal distance (42, 43, 44) 45–52 (53, 55)% of total length. Dorsal rays 72–79, anal rays 64–81 (90). Scales usually lacking on nape, abdomen and vertical fins, sometimes entirely naked . . . . . Short-tailed *Lycodes*, including: *heinemanni* Soldatov, *jugoricus* Knipowitch, *lavalaei* Vladykov & Tremblay, *luetkeni* Collett, *macrolepis* Taranetz & Andriashev, *mucosus* Richardson (=*knipowitschi* Popov), *polaris* Sabine (=*agnostus* Jensen), *raridens* Taranetz & Andriashev, *reticulatus* Reinhardt, *rossi* Malmgren, *schmidti* Soldatov, *semenovi* Popov, *seminudus* Reinhardt, *teraoi* Katayama, *turneri* Bean, *uschakovi* Popov.

2(1) Lateral line descending below midline from the upper corner of the gill cover towards the anal origin, single or double. Preanal distance (33) 35–43 (44, 45, 46)% of total length. Dorsal rays 85–124, anal rays (67–74)* 75–107. Often with scales on nape, abdomen and vertical fins; never entirely naked . . . . . Long-tailed *Lycodes*.

3(4) Lateral line double with one descending from the gill cover towards the anal base and continuing for greater or lesser distances just above the base of the anal fin, and a second one on the midlateral surface of the urosome, which sometimes extends forward, reaching or falling short of the upper corner of the gill cover . . . . . for example, *agulhensis* Andriashev, *atratus* Vladykov & Tremblay, *bathybius* Schmidt,** *esmarkii* Collett, *eudipleurostictus* Jensen, *pallidus* Collett, *squamiventer* Jensen.

4(3) Lateral line single.

5(6) Without midlateral lateral line on tail, a single lateral line extending down towards anal origin or past origin along the anal fin base . . . . . for example, *albolineatus* Andriashev, *andriashevi* Fedorov, *atlanticus* Jensen, *brevipes brevipes* Schmidt, *brevipes diapteroides* Taranetz & Andriashev, *brunneofasciatus* Suvorov, *concolor* Gill & Townsend, *diapterus* Gilbert, *frigidus* Collett, *terraenovae* Collett, *vahlii* Reinhardt.

6(5) Lateral line midlateral on tail and decurved anteriorly.

7(8) Peritoneum pale . . . . . *jenseni* Taranetz & Andriashev, *macrochir* Schmidt, *microlepidotus* Schmidt, *palearis* Gilbert, *soldatovi* Taranetz & Andriashev.

8(7) Peritoneum dark brown, grey or black.

9(10) Length of pelvic fin less than orbit diameter and less than 2% of total length. Pectoral rays 19–21. Dorsal fin with light bars or Y-shaped markings . . . . . *brevipes ochotensis* Schmidt, *ygreknotatus* Schmidt.

10(9) Length of pelvic fin exceeds horizontal orbit diameter, and forms 3.7–5.5% of total length. Pectoral fin rays 16–17. Dorsal fin dark without light markings . . . . . *Lycodes* ***sagittarius*** sp. n.

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* Anal rays less than 75 only in *L. palearis fasciatus* and *L. macrochir* (67–74).

** The lateral line in the 64 mm type of *L. bathybius* is not yet complete (*in lit.* A.P. Andriashev).

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